UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/893,385	06/27/2001	Cary Lee Bates	ROC920010052US1	4740

			EXAMINER
7590	10/22/2004		VO, TED T

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ART UNIT	PAPER NUMBER
2122	

DATE MAILED: 10/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/893,385	BATES ET AL.
	Examiner	Art Unit
	Ted T. Vo	2122

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>07 July 2004</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 10-39* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *8,10-20 and 28-39* is/are allowed.

6)☐ Claim(s) *1-3,6,21-23 and 26* is/are rejected.

7)☐ Claim(s) *4,5,7,24,25 and 27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

         1.☐ Certified copies of the priority documents have been received.

         2.☐ Certified copies of the priority documents have been received in Application No. _____.

         3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
     Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

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DETAILED ACTION

1.   Applicants' arguments filed on 7/07/04, responding to the Office action (04/19/04), have been fully considered.

In the amendment, Claim 9 is canceled. Claim 8 is amended in the manner as indicated in Allowable Subject matter of prior action. According,

Claims 8, 10-20, 28-39 are allowed in this action.

Claims 4-5, 7, 24-25, 27 are objected in this action.

Claims 1-3, 6, 21-23, and 26 stand finally rejected.

Claims 1-8, 10-39 are pending in this application.

Response to Arguments

2.   Applicants arguments to the rejections of Claims 1-2, 21-22 under 35 U.S.C. 102(b) as being anticipated by Hanson, and Claims 3, 6, 8, 11, 23, and 26 under 35 U.S.C. 103(a) as being unpatentable over Hanson et al., have been fully consider. However, the arguments are not persuasive.

For example, in regards to independent Claims 1 and 21, Applicants argue that Hanson et al describes removal of a breakpoint based merely upon a given coordinate in the program file does not specify that the breakpoint being removed is associated with a particularly job (remarks: The last five lines in page 11).

Examiner respectfully disagrees. The limitation, "a particular job" recited in Claims 1 and 21 is broad. Therefore, the claims are interpreted as broadly as their term reasonably allows.

First of all, program elements such as an instruction, a block of a program code, a subroutine, a function, a program thread, all have means of a particular job. And as pointing out by Applicants "coordinate in the program file", the phase "the program file" also has means of a particular job.

Hanson et al., teaches such broad limitation, "a particular job", since Hanson regards the target as a program, source code location, being debugged ("a particular job") (See page 1277, Introductions section), or a function in which a breakpoint or fault occurred (a particular job) (See page 1280, lines 41-42). Furthermore, Hanson's teaching includes setting specific breakpoints in a program (See page 1285, the diamonds set in the program: for example, set at code line 16 to examine the content in the "while" loop ("a particular job"), at 18 to view the content in the "for" loop ("a particular job"), and in front the function getchart() ("a particular job") to view its content, etc. As discussed above, a function, a source code, or a particular instruction has means of "a particular job" because it does a particular thing. Lack of further limitations in making "a particular job" to be different from such a program function, or even a specified source coordinate in a program, would allow interpreting as broadly as reasonable.

With regards to dependent Claims 2, 6, 23, and 26, Applicants' arguments are merely maintained based on the based Claims 1 and 21. Accordingly, the rejection of Claims 3, 6, 8, 11, 23, and 26 under 35 U.S.C. 103(a) as being unpatentable over Hanson et al., is maintaied since the argruemt to the broad recitation "a particular job" is not persuasive as addressed above.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 1-2, 21-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Hanson et al., "A Machine-Independent Debugger", Software – Practice And Experience, Nov 1996.

Given the broadest reasonable interpretation of followed claims in light of the specification:

As per claim 1:

Hanson discloses "*A method of debugging a program in a computer system, comprising automatically removing at least a portion of all breakpoints associated with a particular job* (See page 1277, Introductions section, second paragraph, "program being debugged – the target"; page 1280, lines 41-42, "function"; page 1285, the diamonds set in some particular area of instructions in the program), *from the program when a debugger gets control* (See page 1279, Figure 1) *of the program for the particular job* (See page 1280; using Nub_remove to remove breakpoints).

As per claim 2: Hanson discloses, "*The method of claim 1, wherein the portion is removed during a time when execution of the program is halted*" (see page 1288 line 16, "Once all breakpoints are removed, a c command runs the target to completion").

As per claim 21:

Claim 21 recites a computer readable medium that has the limitation corresponding to the functionality of claim 1. Claim 21 is rejected in the same reason set forth in connecting to the rejection of claim 1.

As per claim 22:

Claim 22 recites a computer readable medium that has the limitation corresponding to the functionality of claim 2. Claim 22 is rejected in the same reason set forth in connecting to the rejection of claim 2.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A person shall be entitled to a patent unless –

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 3, 6, 23, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanson
et al., "A Machine-Independent Debugger", Software – Practice And Experience, Nov 1996.

<u>As per claim 3</u>: Hanson discloses the debugger removes at least one breakpoint from the target (using
Nub_remove).

        Hanson does not expressly show *upon returning control from the debugger to the program,*
automatically reestablishing at least one useful breakpoint from the removed breakpoints

        However, Hanson discloses Nub_set that provides insert breakpoints into the target (See page
1280; using Nub_set to set breakpoints).

        Therefore, it would have been obvious to a person of ordinary skill in the art at the time of
invention was made to use Nub_set in order to reinsert a particular breakpoint. Doing so would allow a
user to pay more attention at a particularly program portion.

<u>As per claim 6</u>: Hanson further discloses, *"The method of claim 3, wherein the at least one useful*
breakpoint may be encountered by a thread which is allowed to execute when control is returned from the
debugger to the program " (see Figure 1, and see page 1280, lines 17-26).

<u>As per claim 23</u>:

Claim 23 recites a computer readable medium that has the limitation corresponding to the functionality of
claim 3. Claim 23 is rejected in the same reason set forth in connecting to the rejection of claim 3.

<u>As per claim 26</u>:

Claim 26 recites a computer readable medium that has the limitation corresponding to the functionality of
claim 6. Claim 26 is rejected in the same reason set forth in connecting to the rejection of claim 6.

Allowable Subject Matter

7.   Claims 8, 10-20 and 28-39 are allowed.

The cited prior arts of record taken alone or in combination fail to teach the claims to a method and computer readable medium that debugs a program in a multi-user system comprising at least features:

"wherein at least one of (i) determining whether at least one useful breakpoint exists in the program for the particular job and (ii) determining whether at least one of the removed breakpoints is useful comprises executing a task to identify at least one breakpoint which may be encountered upon resuming execution of the program" as recited in independent Claim 8,

"during a time when execution of the program is halted, removing all breakpoints associated with a particular job from the program; executing a task to identify each useful breakpoint located in the program, wherein a useful breakpoint is one which may be encountered upon resuming execution of the program", as recited in independent claim 12 and in such manners recited in independent claim 28.

8.   Claims 4-5, 7, 24-25, and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The cited prior arts of record taken alone or in combination fail to teach the claims to a method and computer readable medium that debugs a program in a multi-user system comprising at least features that recite:

in such manners as in Claims 4 and 24: *wherein the at least one useful breakpoint is determined by executing a task to identify each unexecuted breakpoint located in an unexecuted portion of the program;*

in such manners as in Claims 5 and 25: *wherein the at least one useful breakpoint is determined by analyzing a behavior of a user responsible for setting the at least one useful breakpoint;*

and in such manners as in Claims 7 and 27: wherein upon returning control from the debugger to the program at least one thread is prevented from continuing execution and wherein any breakpoints which may have been encountered only by the at least one thread during continuing execution are considered useless and are not reestablished.

Conclusion

9.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

      Ramsey, "Correctness of Trap-Based Breakpoint Implementations", ACM, discloses a formal model of breakpoints in a threaded program.

      Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted T. Vo whose telephone number is (703) 308-9049. The examiner can normally be reached on 8:00AM to 5:30PM.

      If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (703) 305-4552. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

After October 28, 2004, examiner can be reached at new telephone number (571) 272-3706 and

the examiner's supervisor, Tuan Q. Dam can be reached on (571) 272-3694.

Information regarding the status of an application may be obtained from the Patent Application

Information Retrieval (PAIR) system. Status information for published applications may be obtained from

either Private PAIR or Public PAIR. Status information for unpublished applications is available through

Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC)

at 866-217-9197 (toll-free).

TTV
Patent Examiner
Art Unit 2122
October 8, 2004

ANTONY NGUYEN-BA
PRIMARY EXAMINER